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Amdt. Dated October 18, 2005
Reply to Office action of July 18, 2005
Appl. No. 10/025,042

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REMARKS

Drawings

The drawings were objected to for allegedly not showing a "calibrated spoken word". Applicant submits in response that the recited claims are directed to a method as well as to a system and a program product for carrying out that method. Applicant further submits that the drawings submitted adequately illustrate an exemplary system, e.g., FIGs. 1A-1D, and block diagrams demonstrating the method, e.g., FIGs. 2-8. Regarding the claimed "calibrated spoken word", Applicant submits that the disclosure, taken in conjunction with the block diagrams, adequately describes the method by which such calibrated word is derived. See, for example, pages 9-10 and FIGs. 2-5. An explicit illustration of a "calibrated spoken word" is not necessary for a clear understanding of the invention. This may become clearer upon consideration of the remarks set forth below related to the claim rejections.

With respect to the objection as it relates to the photographs, it is respectfully requested that this portion of the drawing objection be held in abeyance until formal drawings can be prepared and submitted. Applicant is currently endeavoring to obtain formal drawings.

In view of the above discussion and that which is presented below, reconsideration and withdrawal of the drawing objection is kindly requested.

Claims

Upon entry of this Amendment, claims 1-16 are all the claims currently pending in the application. Claims xxx have been amended. Claims 1-16 currently stand rejected.

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Specifically, claims 1-16 were rejected under 35 U.S.C. § 112, first and second paragraphs. Claims 1-16 are further rejected under 35 U.S.C. 103 as allegedly being unpatentable over Engebretson (USP 5,548,082). Claims 6, 7, 13 and 14 stand further rejected again under 35 U.S.C. §103 as being unpatentable over Engebretson in view of Shennib (USP 5,785,661) and Delisle (USP 3,809,811) or Parrot Software.

For the reasons set forth below, Applicant respectfully traverses the rejections and requests favorable disposition of the application.

The Present Invention

The present invention is directed to a method of measuring the acuity of a human subject's hearing. As described, related art speech speech intelligibility (SI) testing typically comprises playing a series of recorded words on headphones or some other speaker device. After each word is played, the test subject indicates to the test taker which word the subject believes corresponds to the word which he or she just heard through the speakers or microphones. This indication is done, for example, by the subject verbally repeating the played word back to the test taker or selecting the word from a list or words provided by the teat taker. The test taker records whether the subject correctly or incorrectly identified each played word. At the end of the test, the test taker records a percentage correct and this percentage serves as a measure of speech intelligibility. (Page 2, lines 10-27).

In accordance with conventional SRT methods, an amplifier gain control for the speakers or headphones through which the subject hears the words is kept constant in order to keep the loudness of all of the played back words constant, as perceived by the

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test subject. The loudness perceived by the subject, however, may not be constant because the recorded words may not have been recorded at the sme loudness level. For example, even when the intensity, or loudness, of the word-playing system is kept constant from one word to the next, it is possible that the subject will detect a difference in the loudness of different words due to the fact that the words were recorded at different levels. The differences in the recorded levels "can often somewhat offset the adjustment of the playback gain by the tester during testing". (Page 5, lines 6-12). Accordingly, inconsistencies in the respective levels of the recorded words, i.e., as they are recorded and not as they are perceived by the test subject, can lead to inaccurate results.

According to the method described and claimed in the present application, however, the played words are "calibrated" before they are presented to the test subject. In particular, according to one embodiment, each recorded word is processed, or scaled, such that the root-mean-square (RMS) values of the energy of the words, e.g., the RMS values of digital WAV files representing the words, are equal. (See, for example, page 9, lines 2-8). Accordingly, regardless of the level at which each word was originally recorded, e.g., a screamed word versus a whispered word, the loudness perceived by the test subject would be the same for a given loudness, or gain, setting on the word-playing system. Inaccuracies in test results are, thus, avoided since the difference in intensity perceived by the test subject is attributable to the difference in system gain resulting from the tester's adjustment, and not from differences in the energy levels of the independently recorded words.

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Rejection under 35 U.S.C. § 112, ¶¶ 1 and 2

With respect to the rejection of claims 1-16 under 35 U.S.C. § 112, first and

second paragraphs, Applicant respectfully submits as follows.

Applicant respectfully submits that in accordance with 35 U.S.C. § 112, first

paragraph, the specification provides sufficiently enabling disclosure to permit one of

ordinary skill in the art to make and use the invention. Specifically, a skilled artisan

would understand from reading the specification that "calibrating" a previously recorded

word, as that term is used in the present specification, means that the respective sound

energy of that word is set to "substantially the same sound energy" as the other

recorded words. (Page 5, line 21 to Page 6, line 2). Further, it is disclosed that this

"calibration" can be carried out, for example, by setting either the RMS energy of the

words or the peak energy of the words, to an equal value. Applicant has not contended

that the act of determining an RMS value or peak value is novel and, thus, the

specification or drawings need not specifically describe or illustrate how to carry out

these functions. A skilled artisan would know how to calculate RMS or peak value.

In addition, the grounds of rejection assert that the specification "does not

reasonably provide enablement for any new or unobvious implementations or

calculations for measuring calibration or speech thresholds based upon calibration".

The grounds of rejection further assert that "one of pedestrian skill in the art of speech

signal processing would perform some form of calibration ..." and that references to

RMS and peak value calculations "appear in the prior art with greater precision than

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provided in applicant's specification." These are all arguments related to lack of novelty, however, and are not arguments related to lack of enablement.

To satisfy the enablement requirement of 35 U.S.C. § 112, Applicant merely needs to provide a specification that enables a skilled artisan to make or use the invention. 35 U.S.C. § 112, ¶ 1. As set forth above, Applicant respectfully submits that the specification clearly discloses to a skilled artisan how to carry out the claimed method, i.e., how to calibrate a spoken word, or words, and how to measure the speech reception threshold based on the use of the calibrated word or words. Whether or not the subject matter of the claims is novel is an issue addressed below in regard to the prior art rejections.

In view of the above remarks, withdrawal of the §112, first paragraph, rejection is kindly requested.

For similar reasons to those set forth above regarding the rejection under 35 U.S.C. § 112, first paragraph, Applicant submits that each of claims 1-16 is sufficiently definite in accordance with 35 U.S.C. § 112, second paragraph. Applicant submits that it is clear from the specification and claims that the novel method and system set forth by the Applicant includes the combination of presenting one or more "calibrated" words, as clearly defined, and measuring the subject's speech intelligibility using the calibrated word or words.

In view of the above remarks, withdrawal of the rejections under 35 U.S.C. § 112, first and second paragraphs, is kindly requested.

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Rejection under 35 U.S.C. § 103 over Engebretson

With respect to the rejection of claims 1-16 as being obvious over Engebretson,

Applicant respectfully traverses this rejection at least because Engebretson, as well as

the other cited art of record, does not teach or suggest the recited combination of;

calibrating at least one recorded spoken word by controlling each of
the at least one recorded spoken words to have substantially the same
sound energy;

presenting the at least one calibrated recorded spoken word to a
test subject; and

measuring speech intelligibility of the test subject by utilizing the at
least one calibrated recorded spoken word, wherein the speech
intelligibility measured is indicative of a percentage of the presented at
least one calibrated spoken word or words that the test subject
successfully identified

More particularly, Engebretson discloses an improved hearing aid that can be

"custom fitted in performance characteristics to each individual patient". (Col. 1:58-60).

The hearing aid and the procedures by which it is custom fitted to each patient

disclosed in Engebretson does not include *calibrating recorded spoken words to have*

substantially the same sound energy. The calibration procedure disclosed in

Engebretson, disclosed, for example, at columns 14-17, is completely different than the

claimed calibration procedure, both in function and result. Specifically, in Engebretson,

the calibration step "gathers preliminary data on the hearing aid and its characteristics

when inserted in the patient's ear". For instance, "it is desirable to calibrate for the ear

impedance". (Col. 16:26-27). The steps of the calibration procedure of Engebretson

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include producing a series of fixed-frequency test sounds, each sound being within a

different frequency range. Using these different fixed-frequency sounds "the actual

sound pressure level SPL(F) in the patient's ear" is determined. (Col. 16:61-64). The

results of this calibration procedure are then used "together with measurements of the

auditory area (defining the patient's hearing) to then automatically calculate filter

parameters." (Col. 14:31-34). Accordingly, the calibration step in Engebretson does not

include making respective sound energies of recorded spoken words equal, as required

by independent claims 1, 8 and 15. For at least this reason, Engebretson does not

render obvious the subject matter recited in any of claims 1, 8 and 15, or any claims

dependent therefrom.

Further, Engebretson does not teach or suggest presenting recorded spoken

words, each with the same sound energy, i.e., calibrated, to a test subject. Instead, as

discussed above, Engebretson discloses presenting fixed-frequency sounds, or tones.

For this additional reason, Engebretson does not render obvious any of claims 1-16.

Lastly, Engebretson does not teach or suggest measuring the speech

intelligibility level of a test subject by using recorded spoken words of equal sound

energy, i.e., by using the "calibrated" words. Instead, Engebretson discloses calculating

filter parameters by using a calibration procedure's results in conjunction with

"measurements of the auditory area", which define the patient's hearing. (Col. 14:31-

34). Thus, not only is the calibration procedure of Engebretson different in process than

the claimed calibration, as discussed above, but the calibration result in Engebretson is

not even utilized as part of the measurement of the patient's hearing. A completely

separate measurement is used for that purpose.

For the reasons set forth above, Engebretson does not render obvious any of

independent claims 1, 8 and 15, or any of the claims dependent on these claims,

specifically, claims 2-7, 9-14 and 16. Accordingly, the §103 rejection of claims 1-16

over Engebretson should be withdrawn.

Rejection under 35 U.S.C. § 103 over Engebretson in view of Shennib and Delisle or Parrot Software

Claims 6, 7, 13 and 14 are rejected under 35 U.S.C. § 103 as being unpatentable

over Engebretson in view of Shennib and Delisle or Parrot Software. Because claims 6,

7, 13 and 14 each depends from independent claim 1 or claim 8, which are patentable

as discussed above, and because none of Shennib, Delisle and Parrot Software

compensates for the deficiencies discussed above related to Engebretson, Applicant

submits that claims 6, 7, 13 and 14 are patentable over the art of record for at least the

same reasons as set forth above. Accordingly, withdrawal of the rejection of claims 6,

7, 13 and 14 over the proposed combination of Engebretson in view of Shennib and

Delisle or Parrot Software is kindly requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now

believed to be in order, and such actions are hereby solicited. If any points remain in

issue which the Examiner feels may be best resolved through a personal or telephone
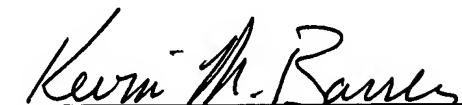
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interview, the Examiner is kindly requested to contact the undersigned at the telephone

number listed below.

Respectfully submitted,

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